

	Standard Operating Procedure	SOP Number <b>G-205</b>	Revision <b>3</b>
	<b>Calibration Verification of Digital Micrometers</b>	Effective Date <i>06/11/19</i>	Page <b>Page 1 of 3</b>
Written by/ Date <i>Jm Ophala</i>	Reviewed by/ Date <i>IL 05-01-19</i>	Approved by/ Date <i>JSS 05/02/19</i>	
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## 1.0 Purpose

The purpose of this SOP is to describe the procedure for a three point calibration verification of digital micrometers.

## 2.0 Scope

This procedure is for the calibration verification of micrometers. This SOP does not cover the calibration or repair of any length measuring device.

## 3.0 Responsibility

- 3.1 It is the responsibility of QC Laboratory Personnel to follow this procedure.
- 3.2 It is the responsibility of QC Laboratory Management to ensure the procedure is current and is being followed.

## 4.0 Definitions

- 4.1 **ISO** – International Organization for Standardization
- 4.2 **IEC** – International Electrotechnical Commission
- 4.3 **NIST** – National Institute of Standards and Technology
- 4.4 **ANSI** – American National Standards Institute
- 4.5 **NCSL** – National Conference of Standards Laboratories
- 4.6 **QC** – Quality Control

## 5.0 References

- 5.1 G-201-F2, Form, Calibration Certificate
- 5.2 G-201, SOP, Calibration Program

## 6.0 Procedure

- 6.1 Refer to SOP G-201 Calibration Program for calibration schedule and instructions on the documentation of the calibration verification.
- 6.2 It is recommended that micrometers are verified or calibrated at an external calibration laboratory at least once every five years.
- 6.3 If a micrometer fails internal calibration verification and the instrument is able to be calibrated the unit must be calibrated and recertified by an external laboratory before returning to service.
- 6.4 Gauge block standards:
- 6.4.1 A gauge block set is to be used as reference standards. The gauge blocks must be verified against NIST traceable standards that have been externally calibrated and verified in compliance with ISO/IEC Guide 25 and/or ANSI/NCSL Z540.3-2006 requirements or newer.
- 6.4.2 Gauge blocks intended for use in calibrating micrometers require certification every five years.
- 6.5 Verification process
- 6.5.1 All measurement readings are recorded in millimeters. Change unit of measure if necessary.
- 6.5.2 Zero the micrometer prior to calibration verification.
- 6.5.3 Perform verification at three points across the range of the micrometer. Typical narrow range micrometer range is 1.00mm to 10.00mm and wide range micrometer range is 1.00mm to 100mm. Select gauge blocks representative of the low, middle and high ranges of the micrometer.
- 6.5.4 All three test lengths must be within tolerance to pass verification.
- 6.5.5 All instrument information, calibration verification and environmental data should be documented on form G-201-F2 Calibration Certificate.
- 6.5.6 The common tolerance for verification of narrow range micrometers is +/- 0.05mm and for Wide Range Micrometers +/- 0.1mm unless otherwise specified by the needs of the application or recommended by the equipment manufacturer.
- 6.5.7 The verification cycle for micrometers is 1 year.

6.5.8 If a micrometer is removed from service for any reason including failed verification, the device in the Calibration Schedule must be lined out with the notation “removed from service.” The device is no longer permitted in GMP work areas until recertified.

6.5.9 For devices that pass verification a calibration sticker will be attached and the unit returned to service.

### 7.0 Revision History

Revision	Date	Description of Changes	CCR #	By
0	10/06/10	New	-	-
1	04/01/13	Changed the SOP format & Number	13-246	B. Johns
2	07/01/15	Biennial review: Changed the SOP format. Transitioned SOP from calibration to verification. Removed form.	15-0579	B. Johns
3	04/08/19	Scheduled review: No changes	19-0242	J. Maignan